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The impact of technology service quality on Bangladeshi banking consumers' satisfaction during the pandemic situation: Green development and innovation perspective in banking service

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ABSTRACT

The present study examined the anticipated technology service quality of private commercial banks in Bangladesh, with a particular emphasis on the satisfaction of e-consumers regarding the banking technologies and services offered by their respective banks. Three hundred fifty-five data were administered using a structural equation modeling technique to examine the hypothesis. The results indicated three technology service quality dimensions exhibited a positive and statistically significant relationship with consumers' satisfaction with banking services. The remaining two dimensions (Responsiveness and Empathy) displayed a negative but significant association. In the context of technology service quality and technology satisfaction, it was observed that all factors except 'Reliability,' 'Responsiveness,' and 'Empathy' exhibited a statistically significant positive association with technology service quality during the pandemic situation. This research provides a new perspective for countries sensitive to and committed to enhancing their green development in banking strategies by embracing technological advancements, particularly during challenging circumstances like a pandemic.

1. Introduction

Consumers assume a crucial role in the functioning of business enterprises (Khan & Sharma, 2020; Rahaman et al., 2022a, 2022b). Service-oriented industries, such as banking, are closely intertwined with a firm's services and, ultimately, its capacity to generate revenue. (Khan, Roy, & Pervin, 2022; Raza et al., 2020). Consumers often exhibit a discerning and deliberate attitude when evaluating the quality of services their respective banks offer. Consequently, retaining customers becomes a formidable task for banking institutions, posing a significant challenge (Ayinaddis et al., 2023). Banks cannot afford to lose customers, so constant contact with them is in their best interest (Ho & Chow, 2023). One of the most effective strategies for building positive customer relationships is understanding their needs and delivering satisfactory services comprehensively. However, to accomplish this objective, banks must consistently strive to improve the quality of their services in various aspects (Khan, Roy, & Pervin, 2022). The significance of service quality in differentiating a bank within the marketplace cannot be overstated (Ahmed et al., 2017, 2022; Inan et al., 2023). The service quality has been widely esteemed by scholars and researchers in academia and business for the past twenty years. A significant contingent of professionals holds the belief that enhancing the caliber of service has the potential to enhance business productivity substantially (Gupta et al., 2021; Liu et al., 2022; Raza et al., 2020; Shi & Shang, 2020; Xin et al., 2023).

2020 ushered in one of the worst crises in human history: a global pandemic caused by a well-known coronavirus. Severe respiratory illness (COVID-19) spread fast worldwide, leading to a global catastrophe and prompting governments to take drastic steps to contain it (Adedoyin & Soykan, 2023; Liu et al., 2020). Therefore, closing schools, non-essential stores, and international border crossings helped achieve the desired goal of social isolation (avoiding human interaction). In addition, this has had far-reaching effects on businesses (including the manufacturing and service industries). The pandemic has exacerbated global supply chain

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issues (Khan, Roy, & Chowdhury, 2022; Khan & Rammal, 2022; Ranney et al., 2020). This crisis has highlighted the need for the worldwide banking industry to place a premium quality on technology-driven green financial services, most notably innovative electronic banking services (Demirgüç-Kunt et al., 2021; Guang-Wen & Siddik, 2023; Naeem et al., 2022).

Several researchers are examining the impact of banking service and consumer satisfaction during the pandemic (Çolak & Öztekin, 2021; Long et al., 2022; Yan et al., 2023); credit service and risks in the pandemic situation (Disemadi & Shaleh, 2020; Phan Thi Hang, 2023); e-banking satisfaction and customer loyalty during pandemic (Indrasari et al., 2022); consumers' IT adoption and bank performance in pandemic time (Dadoukis et al., 2021; Naeem & Ozuem, 2021); Islamic banking and pandemic (Banna et al., 2022; Mansour et al., 2021); banking from the emerging economy in pandemic time (Barua & Barua, 2021); pandemic effect from cross country evidence (Shabir et al., 2023); banking consumer response to payments during pandemic (Kubota et al., 2021); physical banking performance in pandemic (Higgs et al., 2022); financial support to the stakeholders in pandemic (Song et al., 2020; Yudaruddin, 2023); M-banking in pandemic (Naeem et al., 2022); E-banking in pandemic (Rahi et al., 2022). However, to the best of the authors' knowledge and investigating the earlier related literature, this is possibly the first attempt by any researchers to explore the impact of technology service quality on consumers' banking service and banking technology satisfaction during the COVID-19 pandemic, particularly beyond the scope of mobile banking. Therefore, the authors plan to address the deficiency in the current body of research on baking. Hence, two questions can be raised based on the above-discussed research phenomena.

RQ1. How do the antecedents of technology service quality impact green banking consumers' service satisfaction during the pandemic?

RQ2. How do the antecedents of technology service quality impact green banking consumers' technology satisfaction during the pandemic?

The study assessed the relationship between technology service quality and green banking users' service and technology satisfaction during the pandemic to address those research questions. The study employed a survey questionnaire to gather data from a purposively selected sample of 355 respondents, which included individuals who utilize green banking services. This approach was chosen to ensure a comprehensive understanding of the research context (Khan & Hossain, 2021). The study findings show a significant connection between banking service quality and service and technology satisfaction during the pandemic. Most baking companies have transitioned from physical establishments to technology-driven online platforms during the pandemic. However, it was shown that not all aspects of service quality had a positive connection with users' satisfaction with technology and service. The results of this study offer a novel perspective for nations that are susceptible to and yet determined to develop their technology-driven innovative green banking strategies through the implementation of technology adoption, particularly in crises such as a pandemic.

The research was divided into several sections, one dedicated to conducting a literature analysis. The methodology employed in the research was expounded upon in the third section. Subsequently, the fourth segment explicated the examination, discoveries, and discourse of the outcomes, and ultimately, the concluding section culminated with a summary and inference, encompassing constraints as well as the future trajectory of said inquiry.

2. Literature review

2.1. Banking service quality and its components

Quality of service is critical in the banking business for increasing the consumers' happiness. Excellent ties between banks and consumers foster customer faithfulness, which provides banks with a competitive edge. Hence, earlier research found a long-term link between banks' service quality and consumer happiness (Bala et al., 2021; Ali et al., 2021). The concept of service quality seems to be all, covering both service outputs and service performance processes (Ahmed et al., 2017). Following the pioneering research of Parasuraman et al. (1985), the model of service quality has received much attention. The study's findings showed ten parameters of service quality assessment and offered a service quality discrepancy model. They decreased ten parameters of service quality assessment to five in 1988. They developed a 22-item questionnaire and proposed the SERVQUAL paradigm—Parasuraman et al. (1994) state that the SERVQUAL model includes diagnostic properties and some functional consequences. The parameters of the SERVQUAL model are (i) Reliability, (ii) Tangibles, (iii) Responsiveness, (iv) Empathy, and (v) Assurance (Parasuraman et al., 1994).

2.1.1. Reliability

The term “reliability” denotes the degree of consistency and dependability with which a given service operates. (Koay et al., 2022). The capacity of service delivery personnel and technologies to provide the specified services exactly and accurately is referred to as service and technology reliability. During green service activities, online service platforms and technologies directly contact consumers (Demir et al., 2020). As a result, the effectiveness of green service channels may affect how consumers evaluate the level of service. A study found that more excellent service reliability among consumers increases consumer service satisfaction (Saad, 2021).

2.1.2. Tangibles

The tangibles component is a type of physical tool businesses employ to produce and carry out tasks. Customers can form an image that they effortlessly recall based on the supporting technology and the appearance utilized to serve (Balinado et al., 2021). Banking service and technology tangibility impact consumers' satisfaction (Nambiar et al., 2018).

2.1.3. Responsiveness

One of the fundamental aspects of service quality that influences customer happiness is responsiveness (Koay et al., 2022). Consumers may experience a more excellent feeling of security due to the company's and the technology's adherence to their stated preferences during service delivery. This provision assures consumers that the service procedure will be conducted professionally and ethically, enhancing customer satisfaction, particularly within financial institutions (Johnson & Karley, 2018).

2.1.4. Empathy

Empathy comprises a business's and its officials' willingness to comprehend the demands and challenges of its consumers, as well as their ability to communicate effectively and receive individualized attention (Bungatang & Reynel, 2021). A higher degree of consumer satisfaction will result from improved services. Empathy strongly impacts consumer satisfaction since, without it, consumers will continue to be unsatisfied with the quality of the services they receive (Balinado et al., 2021). Empathy in banking services and technology positively impacts consumers' satisfaction (Nambiar et al., 2018).

2.1.5. Assurance

In the service sector, “assurance” denotes employees' expertise, politeness, and capacity to inspire confidence (Koay et al., 2022). Depending on how quickly and correctly they receive service, consumers assess the assurance's level of quality. Consumers expect service providers to deliver their orders precisely and on schedule. It is also crucial to ensure that there are no unstated fees and that the prices are fair and acceptable. Consumers are often more likely to feel confident when they get the specific services they desire (Balinado et al., 2021). The assurance

regarding the use of technology in green baking services significantly impacts consumer satisfaction. (Kesharwani, 2020).

2.2. Banking during the pandemic

The global pandemic has significantly altered the organizational framework of businesses (Khan, Roy, & Chowdhury, 2022). The pandemic has brought about a noticeable shift in organizational and societal contexts (Khan & Arif, 2023b). Specifically, there has been a transition from traditional physical business operations and interactions towards contactless alternatives, particularly in green banking (Rahi et al., 2022). The World Health Organization has issued recommendations advocating for social distancing and contact-free engagement as effective measures to limit the spreading of the coronavirus (Khan & Rammal, 2022). In the meantime, a contactless environment has enabled banking services to expand in the banking technology industry (Alarifi & Husain, 2023). Green financing systems allow consumers to comply with social distancing protocols during the pandemic by delivering critical capabilities that do not need physical touch (Abbas et al., 2023). Therefore, current research investigates the technology service quality of green development in banking that boosts consumers' green baking service and technology satisfaction during the pandemic. Green banking platforms are an alternate banking avenue in the financial industry compared to conventional banking services.

However, the intricate nature of green banking has been brought about by sharp networking systems and the constant evolution of banking technology and software (Rahi et al., 2022). Despite the rapid advancements in technology, the green banking sector has experienced a need for significant development in consumer satisfaction from both the banking service and technology perspective (Alchuban et al., 2022). Previous research has indicated a need for more significant attention to banking technology service quality (De Leon et al., 2020; Ganguli & Roy, 2011; Tam, 2023). Hence, it is imperative to investigate the impact of technology service quality on consumer satisfaction from green development and innovation in the banking business perspective.

2.3. Technology service quality and green banking service satisfaction

Currently, the subject of utmost importance in marketing research is the contentment of consumers (Hammoud et al., 2018). It typically establishes a linkage between antecedent processes of a transaction and subsequent post-purchase behaviors, encompassing alterations in attitudes, recurrent purchases, and allegiance to a brand (Back & Parks, 2003). Customers experience a sense of contentment when they evaluate the actual quality of a product or service against their initial expectations (Fullerton & Taylor, 2015). As per this notion, individuals are more likely to opt for positive dissonance than negative dissonance. The deduction mentioned above is considered relative as it entails comparing subjectivity and a reference point or initial standard of comparison (Bressolles et al., 2014). Green service satisfaction refers to the evaluation conducted by customers on their interactions with technology and their level of satisfaction with conventional customer service methods (Bhatnagr & Rajesh, 2023).

Similarly, Anderson and Srinivasan (2003) defined green service satisfaction as the consumer's pleasure with his or her previous purchase experience with a particular e-commerce. Service quality, such as product variety, tangibles, response, interactivity, and stability, substantially influences green business consumers' happiness (Jeong & Lee, 2010). How a service is delivered through technologies and quality is crucial in enhancing consumer satisfaction (Amin, 2016). Hence, the above discussion can draw a hypothesis related to technology service quality and five sub-hypotheses related to the five dimensions of the SERVQUAL model regarding service satisfaction.

H1. The technology service quality has significantly impacted green banking consumers' service satisfaction during the pandemic.

H1a. The reliability dimension significantly impacts green banking consumers' service satisfaction during the pandemic.

H1b. The tangibles dimension significantly impacts green banking consumers' service satisfaction during the pandemic.

H1c. The responsiveness dimension significantly impacts green banking consumers' service satisfaction during the pandemic.

H1d. The empathy dimension significantly impacts green banking consumers' service satisfaction during the pandemic.

H1e. The assurance dimension significantly impacts green banking consumers' service satisfaction during the pandemic.

2.4. Technology service quality and green banking technology satisfaction

The availability of innovative green services and technology has empowered green consumers to obtain provisions without requiring direct assistance from service personnel (Bhatnagr & Rajesh, 2023; Khan & Pervin, 2022). Technology service organizations provide many benefits, including technology innovation, improved customer experience, and decreased personnel costs supporting green development and innovation. (Abbas et al., 2023; Maheshwari & Chatnani, 2023). ATMs, internet banking, mobile banking, and online buying are the most popular banking technologies (Iqbal et al., 2017). In today's dynamic marketplace, bank functions rely highly on current information and telecommunication technology. The Internet connection has grown substantially because of fiber optics and CPUs, making banking processes smoother and faster (Meuter et al., 2000).

Similarly, with the mobile network, the Smartphone and subsequent generations of communications (1G-5G) have revolutionized online dealings (Prasadh & Suresh, 2016). As a result, technology significantly impacts the banking industry, particularly in providing excellent services to consumers (Khan & Arif, 2023a). The banking sector is pushed to implement technology procedures and integrate everyday business laws locally and globally (Ahmed et al., 2017). Therefore, a hypothesis related to the technology service quality and five sub-hypotheses related to the five dimensions of the SERVQUAL model regarding technology satisfaction can be drawn from the above discussion.

H2. The banking technology service quality significantly impacts green banking consumers' technology satisfaction during the pandemic.

H2a. The reliability of the banking technology service dimension significantly impacts consumers' technology satisfaction during the pandemic.

H2b. The tangibles of the banking technology service dimension significantly impact consumers' technology satisfaction during the pandemic.

H2c. The responsiveness of the banking technology service dimension significantly impacts consumers' technology satisfaction during the pandemic.

H2d. The empathy of the banking technology service dimension significantly impacts consumers' technology satisfaction during the pandemic.

H2e. The assurance of the banking technology service dimension significantly impacts consumers' technology satisfaction during the pandemic.

Based on the mentioned hypotheses and sub-hypotheses, the following conceptual framework can be drawn in Fig. 1.

3. Methodology

The empirical research used data from private commercial bank customers in Bangladesh during the pandemic.

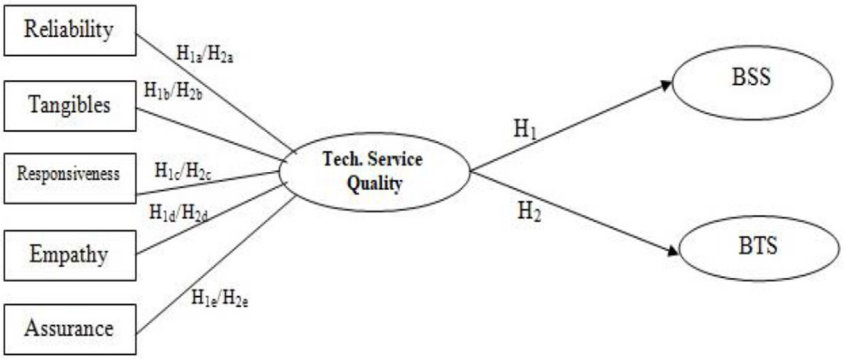

Fig. 1. Proposed conceptual framework of the research. *note: BSS = green banking consumers' service satisfaction, BTS = green banking consumers' technology satisfaction.
*Source: Authors' compilation from (Kesharwani, 2020; Nambiar et al., 2018)

3.1. Participants and selection criteria

As of June 2020, 132.4 million people had deposit accounts in different banks in Bangladesh. In addition, 114.051 million users also used green banking services (Khan, Rana, & Hosen, 2022; The Business Standard, 2022). Due to the large sample, appropriate statistical information from good sources, and the pandemic circumstances, 500 participants were targeted using purposive sample techniques via social media sites to acquire the essential data (Khan & Hossain, 2021). The Raosoft sample measurement calculator (http://www.raosoft.com/samplesize.html) was used to calculate the sampling quantity. The rationale for the sampling selection and the enormous population were uncertain (Iacobucci, 2010). Nevertheless, Dhaka was chosen as the research region since it is the country's capital and has a big congregation of the intended demographic (Khan et al., 2017; Khan & Roy, 2023; Pervin & Khan, 2022). Only 355 data (71.00 % of responses were received) were determined adequate to pursue the study after data collection. Table 1 provides an overview of the research respondents' demographic data. Most respondents were male (n = 324; 91.3%) and female (n = 31; 8.7%). In Bangladeshi banking, females interact less than males (Uddin et al., 2023). After that, the majority of the consumers who had taken their banking services from their respective banks for less than five years (n = 145; 40.8%), then 5–10 years (n = 123; 34.7%), and more than 10 years of service engagements were found as (n = 87; 24.5%). In the case of consumers' education level, (n = 33; 9.3%) of the consumers had up to higher secondary or less level of education and (n = 216; 60.9%) had a bachelor's level and (n = 106; 29.8%) of the respondents were having Master or above the level of education standard.

In comparison to the banks, most of the consumers were taking their banking services from Dutch Bangla Bank Ltd. (n = 159; 44.8%), and the rest of the consumers were found from Bank Asia Ltd., BRAC Bank Ltd., City Bank BD Ltd., Islami Bank BD Ltd., Southeast Bank BD Ltd, Trust Bank Ltd., and Standard Chartered Bank Bangladesh Ltd.

3.2. Item development and measurement techniques

A questionnaire with a structured format was created by utilizing the dimensions of the service quality items (Parasuraman et al., 1985) and conducting a thorough review of relevant literature. The survey was divided into two distinct sections. The initial segment of the study encompassed demographic data, whereas the subsequent segment encompassed components related to model measurement. A five-point Likert scale was developed, where a score of one represents strong disagreement and a score of five represents strong agreement. (Khan et al., 2018). The research identified 22 factors falling within the technology service quality dimensions, five factors within the realm of green banking consumers' banking service satisfaction, and three factors about consumers' banking technology satisfaction (Parasuraman et al., 1985;

Table 1
Demographic summary.

Variables	Category	Frequency (n = 355)	Percentage (%)	Cumulative percent
Gender	Male	324	91.3	91.3
	Female	31	8.7	100.0
Service Period	Less than 5 Years	145	40.8	50.2
	5–10 Years	123	34.7	89.5
	Above 10 Years	87	24.5	100.0
	Up to Higher Secondary	33	9.3	28.4
Education	Bachelor degree	216	60.9	46.8
	Master and above	106	29.8	100.0
Bank	Dutch Bangla Bank Ltd.	159	44.8	44.8
	Bank Asia Ltd.	35	9.8	54.6
	BRAC Bank Ltd.	41	11.5	66.1
	City Bank BD Ltd.	23	6.5	72.6
	Islami Bank BD Ltd.	28	7.9	80.5
	Southeast Bank BD Ltd	31	8.7	89.2
	Trust Bank	22	6.2	95.4
	SCB BD Ltd.	16	4.6	100.0

Source: Authors' calculation

Amin, 2016). The formatted questionnaire (Table 2) was distributed to the respondents. (Naslund et al., 2019). MS Excel (Version 2007), SPSS (Version 22), and SPSS AMOS (Version 23) application software were used to evaluate the data. To execute and evaluate the suggested model, an EFA (exploratory factors analysis), a CFA (confirmatory factor analysis), and structural equation modeling (SEM) were used (Al Ahad & Khan, 2020).

4. Analysis and discussion

4.1. Model measurement, fit indices, validity, and reliability

The investigation employed structural equation modeling (SEM) analysis to evaluate the efficacy of two distinct models. The suitability of the technology service quality and the proposed research framework were determined for the study. The model summary of technology service quality and the proposed model, as presented in Table 3, elucidated that all the model fit indicators, including χ2/df, NFI, CFI, AGFI, GFI, TLI, and RMSEA, met the threshold level as per the established criteria (Hair et al., 2010; Khan et al., 2019). The proposed research framework was tested using the "Estimate means and intercepts" method due to the absence of specific data from BSS and BTS. As a result, the model was unable to compute GFI and AGFI. Nevertheless, the remaining fitness indicators met the recommended threshold level proposed and implemented by Aditjandra et al. (2012).

Table 4 presents a comprehensive summary of the validity and reliability analysis, encompassing the item codes, factor loading, Composite reliability, and Cronbach's alpha. In order to assess the proposed model, the investigation initially employed exploratory factor analysis (EFA) to establish its construct validity. Subsequently, confirmatory factor analysis (CFA) was conducted to verify the model. Notably, all the factors generated by EFA were retained as they exhibited robust factor loads (refer to Table 4) exceeding 0.60 (Chatterjee & Kar, 2020).

4.2. Results from analysis

The research identified seven components and thirty categorical questions (item). The study of literature provided a conceptual model developing two hypotheses and ten sub-hypotheses. The conceptual model has been validated with the help of SEM analysis utilized by SPSS AMOS (V, 23). After validation, it appears that out of two hypotheses and ten sub-hypotheses, three sub-hypotheses (H_{2a}, H_{2c}, and H_{2d}) have not been supported, that is, the impact of reliability, responsiveness, and empathy dimension of the technology service quality on green banking consumers' technology satisfaction (BTS) during the pandemic crisis have not been supported. The estimation of coefficients of the determinant

Table 2
Measurement items.

Variables	Item Code	Items	Source
Reliability	**RD-1**	Promise to do something by a certain time	Parasuraman et al., 1985; Parasuraman et al., 1994; Nambiar et al., 2018; Kesharwani, 2020
	RD-2	Sincere in consumer problem-solving.	
	RD-3	Perform the service right the first time.	
	RD-4	Green service promise.	
	RD-5	Insist on error-free online records.	
Tangibles	**TD-1**	Modern-looking green equipment	
	TD-2	Physical green service facilities	
	TD-3	Tech-savvy Employees	
	TD-4	Materials associated with the green service	
Responsiveness	**RSD-1**	Know when services will be performed	
	RSD-2	Prompt service to customers	
	RSD-3	Always be willing to help customers.	
	RSD-4	Never too busy to respond to customers' requests	
Assurance	**AD-1**	Instill confidence in customers	
	AD-2	Customers feel safe in the online transaction.	
	AD-3	Consistently courteous with customers	
	AD-4	Knowledge to answer customers' questions	
Empathy	**ED-1**	Give customers individual attention	
	ED-2	Convenient operating features for all their customers	
	ED-3	Give customers personal attention.	
	ED-4	Customer's best interests at heart	
	ED-5	Understand the specific needs of their customers.	
Bank's Service Satisfaction	**BSS-1**	Satisfied with the green banking services	Zavareh et al., 2012; Mathew et al., 2020
	BSS-2	Satisfied with the service time	
	BSS-3	Satisfied with records keeping	
	BSS-4	Satisfied with the quick service to my request	
	BSS-5	Satisfied in online transactions	
Banking Technology Satisfaction	**BTS-1**	Satisfied with modern-looking green equipment	Liébana-Cabanillas et al., 2013; Ramesh et al., 2020
	BTS-2	Satisfied with the green feature facilities	
	BTS-3	Satisfied with the technologies associated with the green service	

Table 3
SEM model fit summary.

Model	χ^2	df	Sig.	χ^2/df	NFI	CFI	AGFI	GFI	TLI	RMSEA
SERVQUAL	459.741	195	.000	2.358	.930	.958	.864	.895	.950	.062
Research Model	910.899	385	.000	2.366	.881	.927	.821	.867	.912	.062

*Note: χ^2 = Chi Square; df = Degree of freedom; NFI = Normed Fit Index; CFI = Comparative Fit Index.
AGFI = Adjusted Goodness of Fit Index; GFI = Goodness of Fit Index; TLI = Tucker-Lewis Index.
RMSEA = Root Mean Square Error of Approximation.
Source: Authors' SPSS AMOS output.

Table 4
Summary of EFA and CFA outcomes.

Variables	Item Code	EFA		CFA	
		Factor loading	α	Factor loading	CR
Reliability	**RD-1**	.755	0.915	.80	0.916
	RD-2	.815		.85	
	RD-3	.797		.83	
	RD-4	.814		.86	
	RD-5	.794		.80	
Tangibles	**TD-1**	.771	0.752	.83	0.900
	TD-2	.755		.81	
	TD-3	.755		.82	
	TD-4	.721		.87	
Responsiveness	**RSD-1**	.782	0.861	.80	0.868
	RSD-2	.802		.83	
	RSD-3	.810		.84	
	RSD-4	.686		.68	
Assurance	**AD-1**	.708	0.862	.69	0.858
	AD-2	.801		.79	
	AD-3	.816		.81	
	AD-4	.810		.81	
Empathy	**ED-1**	.793	0.912	.83	0.923
	ED-2	.755		.88	
	ED-3	.776		.86	
	ED-4	.812		.84	
	ED-5	.776		.79	
BSS	**BSS-1**	.693	0.726	.68	0.819
	BSS-2	.711		.81	
	BSS-3	.687		.60	
	BSS-4	.660		.72	
	BSS-5	.611		.63	
BTS	**BTS-1**	.618	0.771	.65	0.683
	BTS-2	.711		.67	
	BTS-3	.638		.62	

Note: Composite reliability = CR; Cronbach's alpha = α
*Source: Authors'

(R^2) reveals that the reliability, tangibles, responsiveness, empathy, and assurance dimension of the technology service quality can explain and interpret green banking consumers' technology satisfaction (BTS) to the tune of 26% since the concerned coefficient of the determinant is 0.26 (R^2). Out of all these independent variables (reliability, tangibles, responsiveness, empathy, and assurance), the impact of assurance on BTS (H_{2e}) is the highest since the magnitude of the concerned path coefficient is 0.301 with the level of significance **($P < 0.01$). The influence of empathy on BTS (H_{2d}) is the lowest as the concerned path coefficient is −0.162 with significance level ns ($p > 0.05$). As such, this hypothesis (H_{2d}) is not significant, and the concerned hypothesis has not been supported. Again, the estimation of coefficients of the determinant (R^2) reveals that the reliability, tangibles, responsiveness, empathy, and assurance dimension of the technology service quality can explain and interpret green banking consumers' service satisfaction (BSS) to the tune of 30.5% since the concerned coefficient of the determinant is 0.305 (R^2). Out of all these independent variables (reliability, tangibles, responsiveness, empathy, and assurance), the impact of assurance on BTS (H_{1e}) is the highest since the magnitude of the concerned path coefficient is 0.567 with the level of significance ***($P < 0.001$). The influence of empathy on BTS (H_{1d}) is the lowest as the concerned path coefficient is −0.350 with significance ***($P < 0.001$). Presumably, for the banking technologies in Bangladesh, handling green banking consumers' technology satisfaction (BTS) is poor. Weak or inadequate banking technologies rarely utilize the full potential of consumers' satisfaction with banking services. Practitioners should concentrate on this problem.

The study delineated seven distinct constituents and thirty categorical inquiries. Examining literary works resulted in formulating a conceptual framework that generated a pair of primary and ten subsidiary hypotheses. The SEM analysis conducted through SPSS AMOS (version 23) has been utilized to validate the conceptual model. Upon validation, it has been determined that out of the two hypotheses and ten conceptually developed sub-hypotheses, three sub-hypotheses (H_{2a}, H_{2c}, and H_{2d}) did not receive support. Specifically, the impact of technology service quality's reliability, responsiveness, and empathy dimensions on consumers' banking technology satisfaction (BTS) during the pandemic crisis was not supported. The analysis of the determinant coefficients (R^2) indicates that the dimensions of reliability, tangibles, responsiveness, empathy, and assurance in the technology service quality model can account for 26% of the variance in green banking consumers with banking technology (BTS), as evidenced by the coefficient of determination of 0.26 (R^2). Among the independent variables of reliability, tangibles, responsiveness, empathy, and assurance, the assurance variable has the most significant impact on BTS (H_{2e}). The path coefficient of 0.301 supports the following, demonstrating statistical significance at a significance level of $P < 0.01$. The impact of empathy on BTS (H_{2d}) is deemed to be minimal, as evidenced by the path coefficient of −0.162 and the insignificant level of significance at ns ($p > 0.05$). Thus, hypothesis H_{2d} has not yielded significant results nor been supported. Again, the analysis of the determinant coefficients (R^2) indicates that the dimensions of reliability, tangibles, responsiveness, empathy, and assurance in the technology service quality model can account for 30.5% of the variance in green banking consumers' satisfaction with banking services (BSS), as evidenced by the coefficient of determination of 0.305 (R^2). Among the independent variables of reliability, tangibles, responsiveness, empathy, and assurance, the assurance variable has the most significant impact on BTS (H_{1e}). A statistically significant path coefficient of 0.567, with a significance level of $P < 0.001$, provides empirical evidence for this claim. The path coefficient for the influence of empathy on BTS (H_{1d}) is −0.350, indicating a low level of influence. This coefficient is statistically significant at the level of $P < 0.001$. It can be inferred that managing green banking consumers' technology satisfaction (BTS) in Bangladesh's banking sector is suboptimal. Banking technologies that are weak or inadequate often fail to fully leverage the potential of green banking consumers' satisfaction with banking services. It is recommended that practitioners focus their attention on this particular issue.

4.3. Discussion of the results

Two main hypotheses and ten sub-hypotheses were developed based on the technology service quality (with the help of the service quality model) on green banking consumers' service and technology satisfaction (Kesharwani, 2020; Nambiar et al., 2018). The phenomenon and context of the study were selected as the Bangladeshi green banking orientation during the lethal infectious disease like COVID-19. The suggested model result is disclosed in Table 5, and Fig. 2 displays the standardized path parameters for the SEM generated by SPSS (AMOS). The conceptual model fit indices are shown in Table 3. The study result demonstrated that the technology service quality model significantly positively impacts consumer green banking service satisfaction during the pandemic. That means during the pandemic, green development and innovation in banking were a crying need for the Bangladeshi banking sector. Bangladeshi banking users believed that if their respective banks maintained green technology development and innovation in banking service quality during any catastrophe like COVID-19, they would be happy to take banking services. The study outcomes supported the earlier study on sustainable banking through green technology innovation and development in banking services (Amin, 2016; Kayeser Fatima & Abdur Razzaque, 2014; Rod et al., 2009; Sasono et al., 2021).

Subsequently, in the case of five technology service quality dimensions, the study found that the reliability, tangibles, responsiveness, empathy, and assurance dimensions of the technology service quality model were found to have a significant impact on green banking consumers' service satisfaction during the pandemic crisis. Those outcomes also supported the earlier findings (Haq & Awan, 2020; Khan et al., 2023; Mwiya et al., 2022) and aligned with the urge for green technology innovation and development in several service dimensions. However, the responsiveness dimension of banking technology service, such as the

Table 5
Hypotheses testing with Result (SEM).

Relationship	Coefficient	p-value	Results
H_1: Tech. Service quality →E-Consumers' Green Banking Service Satisfaction	0.349	.000	Supported
H_{1a}: Reliability→E-Consumers' Green Banking Service Satisfaction	0.190	.007	Supported
H_{1b}: Tangibles→E-Consumers' Green Banking Service Satisfaction	0.115	.017	Supported
H_{1c}: Responsiveness→E-Consumers' Green Banking Service Satisfaction	−0.154	.043	Supported
H_{1d}: Empathy→E-Consumers' Green Banking Service Satisfaction	−0.350	.000	Supported
H_{1e}: Assurance→E-Consumers' Green Banking Service Satisfaction	0.567	.000	Supported
H_2: Tech. Service quality →E-Consumers' Green Banking Tech. Satisfaction	0.481	.000	Supported
H_{2a}: Reliability→E-Consumers' Banking Technology Satisfaction	0.152	.068	Not Supported
H_{2b}: Tangibles→E-Consumers' Banking Technology Satisfaction	0.150	.009	Supported
H_{2c}: Responsiveness→E-Consumers' Banking Technology Satisfaction	0.054	.550	Not Supported
H_{2d}: Empathy→E-Consumers' Banking Technology Satisfaction	−0.162	.056	Not Supported
H_{2e}: Assurance→E-Consumers' Banking Technology Satisfaction	0.301	.002	Supported

Notes: Parameter estimation significant at $p < 0.001$; 0.01; 0.05.
Source: Authors'

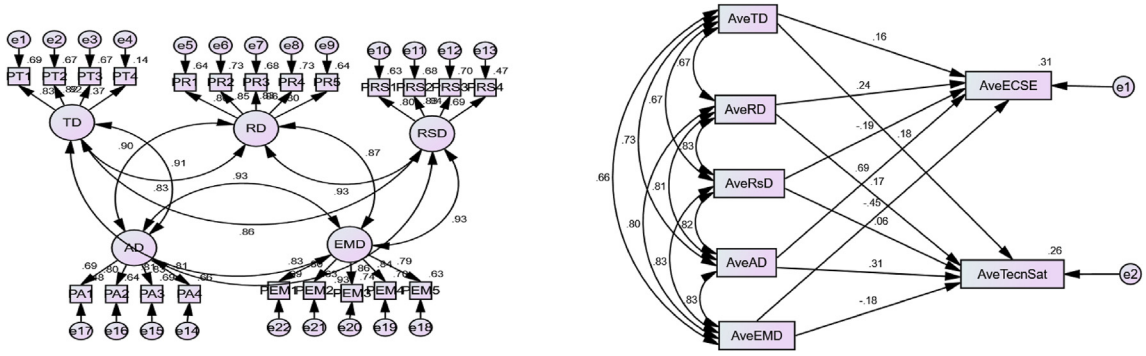

Fig. 2. SEM Flowchart and results of SERVQUAL and Research Model.
Source: Authors'

capacity to assist and respond to consumer demands, empathy, personalized care attention, and services offered by the banks during the pandemic crisis, was negatively related to green banking consumers' service satisfaction. This outcome relates to the earlier results (Jamal & Naser, 2002; Theodorakis et al., 2001) and urges green technology innovation and development in the responsiveness dimension.

From the banking consumers' technology service satisfaction findings, the banks need to work on the above dimensions for their green banking consumers' positive satisfaction (Parasuraman et al., 1994). Such outcomes support the previous findings of (Agnihotri et al., 2016; Jameel et al., 2021) and reverse the earlier result of (Kashkoli et al., 2017).

The study's findings indicate that the technology service quality model has a noteworthy and favorable influence on the level of satisfaction of green banking consumers with banking technology during the pandemic. Bangladeshi green banking users believe they would be delighted with banking technology satisfaction if their bank provided developed and innovative banking technology-based services during such a crisis. The study's findings are consistent with the previous research (Harun, 2023; Khan et al., 2021; Li et al., 2021) and reverse the outcome of (Rasli et al., 2011). The study identified that the reliability, tangibles, responsiveness, empathy, and assurance dimensions of the technology service quality model were found to have some impact on consumers' green banking technology satisfaction during the pandemic. However, the reliability, responsiveness, and empathy dimensions were not statistically significant. This outcome aligns with the outcomes of (Rasli et al., 2011) and reverses the outcomes of (Li et al., 2021; Narteh, 2015). That means, apart from the other two technology service quality dimensions (which were positively significant), reliability (like the capability to carry out services accurately), responsiveness (such as the capacity to assist and respond to consumer demands), and empathy (such as personalized care, attention, as well as services offered by the banks) dimensions during the crisis were not statistically significantly related to the green banking consumers' service satisfaction. From the green banking consumers' banking service satisfaction findings, the banks need to work on the above three dimensions for their consumers' positive satisfaction (Parasuraman et al., 1994) and urge green technology innovation and development in the reliability, responsiveness, and empathy dimension.

There was an indication from the earlier service quality and consumer satisfaction literature (Ahmed et al., 2017; Fullerton & Taylor, 2015; Prasadh & Suresh, 2016; Meuter et al., 2000) that a significant connection may be found in business technology service quality and customer technology and service satisfaction. The study's findings are bridging the literature gap in the banking sector, and outcomes prove that technology service quality significantly impacts banking consumers' service and technology satisfaction. Like the other business industries, the banking sector struggles to gain consumer satisfaction in several service quality dimensions aspects. Consequently, technology service quality dimensions such as reliability, responsiveness, and empathy failed to prove the relation or even negatively relate with the provided service quality. That might support the argument that consumers were bound to take the innovative green banking platform due to the pandemic situation, and the same thing may happen to countries who have similar patterns of green banking services and technology platforms across the globe (Iberahim et al., 2016; Kaur et al., 2021; Purba et al., 2021). Therefore, the findings of this research will enhance the existing literature on green banking and the urge for innovative and developed green banging technology towards users green banking service and technology satisfaction, which has been previously explored by scholars (Amin, 2016; Hossain et al., 2018; Sasono et al., 2021; Li et al., 2021).

5. Implications and concluding remarks

It is now more challenging than ever for banks to work at the best service quality based on traditional banking service platforms, as the pandemic has substantially altered demand and disrupted supply chains. Failure to perform so would jeopardize the quality of banking services, particularly for a nation like Bangladesh, which is still working to provide the critical foundation for emerging and innovative green banking services. This study tried to learn about consumer satisfaction by availing themselves of banking services and technology during the pandemic. The research revealed a significant and positive correlation between the quality of service and customer satisfaction, as well as the quality of banking technology and customer satisfaction. The most important limitation of the study was that it had trouble gathering data. During the outbreak, maintaining an interpersonal obstacle was critical, and many customers of banks lacked the necessary level of technological expertise. Another crucial issue concerned the availability of research funds. Because of these constraints, the researchers could not collect significant data sizes nationwide. Despite these constraints, the outcomes of this research have good implications from both the Management and theoretical perspectives. Bangladesh has great potential in the banking sector, and such findings will enable the banking policymakers to establish the basis of tech maturity and diffusion in the banking sector along with its contribution to economic development. The practical implications of the research may involve developing and formulating innovative service marketing and technology-driven innovative green banking strategies and policy-making for enhancing e-consumption satisfaction in banks' green development during a natural disaster such as the COVID-19 pandemic. Moreover, banking users may encounter challenges arising from two possible factors: banking service and technology service quality. Regarding both service perspectives, banks can effectively resolve such issues to enhance innovative and developed green banking technology. The identified green banking service and technology service quality and satisfaction model can be classified within the green banking and marketing domain, specifically, green banking, green technology, green service marketing and development, and consumer behavior. This categorization is based on theoretical considerations. Furthermore, the technology service quality model can be applied to the intersection of green banking development, technology development and innovation, and consumer psychology within banking services. Future investigations could incorporate comprehensive technology-driven green development in banking services based on variables like cloud services, e-brand loyalty, e-security, and trustworthiness. The selected relationships will be tested with mediation and moderation of brand loyalty and trust. Such research can be conducted on government commercial banks compared to private commercial banks in Bangladesh or across the globe. Several demographic variables, such as gender, age, education level, and length of service, can be employed as mediators within the proposed and validated research framework.

Availability of data and material

The study used the primary data from the participants held accounts with private commercial banks in Dhaka, Bangladesh.

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Authors' contributions

The authors conjointly prepared the conceptual based of the paper along with abstract, methodology, analysis, and interpretation, ending notes etc. and fine tune the whole.

Ethics approval and consent to participate

Not applicable.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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